

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Present Application:

Applicants : Kie Y. Ahn and Leonard Forbes
Attorney Docket No. : 500466.02
Filed : Concurrently herewith
Title : FIELD EMISSION DISPLAY HAVING REDUCED POWER
REQUIREMENTS AND METHOD

Prior Application:

Examiner : K. Guharay
Art Unit : 2879
Serial No. : 09/140,623

PRELIMINARY AMENDMENT

Box Patent Application
Commissioner of Patents
Washington, D.C. 20231

Sir:

Please amend the above-identified application as follows:

In the Specification:

Amend the specification by inserting a new section before the "Technical Field"
as follows:

-- CROSS-REFERENCE TO RELATED APPLICATION

This application is a divisional of pending United States Patent Application
No. 09/140,623, filed August 26, 1998. --

In the Claims:

Please cancel claims, amend claims and add new claims as follows:

Cancel claims 1-41.

Amend claim 43 and 56 to read as follows:

43. (Amended) The method of claim 42 wherein the act of oxidizing the porous silicon layer to form a layer of porous silicon dioxide comprises oxidizing the porous silicon layer to form a layer of porous silicon dioxide having a relative dielectric constant of less than 3.

56. (Amended) A method of fabricating a field emission display baseplate comprising:

forming conductors on a substrate;

forming a porous silicon dioxide layer on the conductors and on the substrate, the porous silicon dioxide layer comprising columnar spacers of silicon dioxide with pores between the columnar spacers;

forming an extraction grid on the porous silicon dioxide layer;

etching openings through the silicon dioxide and the extraction grid; and

forming emitters in the openings in the porous silicon dioxide and the extraction grid.

Please add new claims 62-84 as follows:

62. (New) The method of claim 42 wherein the act of etching the silicon layer forms a porous silicon layer having at least 50% voids and the act of oxidizing the porous silicon layer forms a porous silicon dioxide layer having at least 22.5% voids.

63. (New) The method of claim 62 wherein the porous silicon dioxide layer has a dielectric constant of less than 3.

64. (New) The method of claim 42 wherein the act of etching the silicon layer forms a porous silicon layer having at least 75% voids and the act of oxidizing the porous silicon layer forms a porous silicon dioxide layer having at least 61.5% voids.

65. (New) The method of claim 64 wherein the porous silicon dioxide layer has a dielectric constant of less than 1.6.

66. (New) The method of claim 46 wherein the act of etching the polycrystalline silicon layer forms a porous polycrystalline silicon layer having at least 50% voids and the act of oxidizing the porous polycrystalline silicon layer forms a porous silicon dioxide layer having at least 22.5% voids.

67. (New) The method of claim 66 wherein the porous silicon dioxide layer has a dielectric constant of less than 3.

68. (New) The method of claim 46 wherein the act of etching the polycrystalline silicon layer forms a porous polycrystalline silicon layer having at least 75% voids and the act of oxidizing the porous polycrystalline silicon layer forms a porous silicon dioxide layer having at least 61.5% voids.

69. (New) The method of claim 68 wherein the porous silicon dioxide layer has a dielectric constant of less than 1.6.

70. (New) The method of claim 42 wherein the porous silicon dioxide layer is comprised of columnar silicon dioxide spacers with pores between the columnar spacers.

71. (New) The method of claim 53 wherein the act of anodizing the polycrystalline silicon layer forms a porous polycrystalline silicon layer having at least 50%

voids and the act of oxidizing the porous polycrystalline silicon layer forms a porous silicon dioxide layer having at least 22.5% voids.

72. (New) The method of claim 71 wherein the porous silicon dioxide layer has a dielectric constant of less than 3.

73. (New) The method of claim 53 wherein the act of anodizing the polycrystalline silicon layer forms a porous polycrystalline silicon layer having at least 75% voids and the act of oxidizing the porous polycrystalline silicon layer forms a porous silicon dioxide layer having at least 61.5% voids.

74. (New) The method of claim 68 wherein the porous silicon dioxide layer has a dielectric constant of less than 1.6.

75. (New) The method of claim 52 wherein the porous silicon dioxide layer is comprised of columnar silicon dioxide spacers with pores between the columnar spacers.

76. (New) The method of claim 42 wherein the act of oxidizing the polycrystalline silicon layer comprises thermally oxidizing the polycrystalline silicon layer at a temperature in excess of 950°C.

77. (New) The method of claim 42 wherein the act of oxidizing the polycrystalline silicon layer comprises plasma oxidizing the polycrystalline silicon layer at a temperature in excess of 450°C.

78. (New) The method of claim 56 wherein the porous silicon layer comprises at least 50% voids.

79. (New) The method of claim 56 wherein the porous silicon dioxide layer comprises at least 22.5% voids.

80. (New) The method of claim 79 wherein the porous silicon dioxide layer has a dielectric constant of less than 3.

81. (New) The method of claim 56 wherein the porous silicon dioxide layer comprises at least 61.5% voids.

82. (New) The method of claim 81 wherein the porous silicon dioxide layer has a dielectric constant of less than 1.6.

83. (New) The method of claim 56 wherein forming the porous silicon dioxide layer comprises thermally oxidizing a porous silicon layer at temperature in excess of 950°C.

84. (New) The method of claim 56 wherein forming the porous silicon dioxide layer comprises plasma oxidizing a porous silicon layer at a temperature in excess of 450°C.

REMARKS

Claims 1-61 were originally submitted in the parent application. Method claims 42-61 were subject to restriction in the parent and are now submitted in this divisional application along with new dependent claims 62-84. Accordingly, claims 42-84 are now pending. Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made".

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

43. (Amended) The method of claim 42 wherein the act of oxidizing the porous silicon layer to form a layer of porous silicon dioxide comprises oxidizing the porous silicon layer to form a layer of porous silicon dioxide having a relative dielectric constant of less than [three] 3.

56. (Amended) A method of fabricating a field emission display baseplate comprising:

forming conductors on a substrate;

forming a [layer of] porous silicon dioxide layer on the conductors and on the substrate[;], the porous silicon dioxide layer comprising columnar spacers of silicon dioxide with pores between the columnar spacers;

forming an extraction grid on the porous silicon dioxide layer;

etching openings through the silicon dioxide and the extraction grid; and

forming emitters in the openings in the porous silicon dioxide and the extraction grid.